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April 6, 1843.

FRANCIS BAILY, Esq., V.P., in the Chair.

Henry Wollaston Blake, Esq., and James Heygate, M.D., were balloted for and duly elected Fellows of the Society.

The following papers were read, viz.—

1. "On the general and minute Structure of the Spleen in Man and other Animals." By William Evans, M.D. Communicated by P. M. Roget, M.D., Sec. R.S.

After adverting briefly to the discordant opinions of Malpighi, Ruysch, and others regarding the structure of the spleen, the author proceeds to detail the results of the investigations on this subject, in which he has been for many years engaged. According to his analysis, the following are the component parts of this organ:—first, a reticulated fibro-elastic tissue; secondly, a pulpy parenchyma, containing the Malpighian glands and the splenic corpuscles; thirdly, distinct cellular bodies; fourthly, the usual apparatus of arteries, veins, lymphatics and nerves; fifthly, certain fluids; and lastly, the membranes or tunics by which it is invested.

He describes the cells of the spleen as being formed of a lining membrane, continued from that of the splenic vein, and strengthened by filaments of the fibro-elastic tissue. The splenic vein communicates with these cells, at first by round foramina, then by extensive slits resembling lacerations; and it ultimately loses itself entirely in the cells. The cells themselves communicate freely with one another, and also with the veins of the parenchyma; and may therefore be considered as in some measure continuations of the veins. This structure constitutes a multilocular reservoir of great extensibility, and possessing great elastic contractility; properties, however, which exist in a much less degree in the human spleen than in that of herbivorous animals; in which animals the cellated structure itself is much more conspicuous, and predominates over the parenchymatous portion. As the splenic artery has no immediate communication with the cells, these latter may be filled much more readily by injection from the vein than from the artery. In the ordinary state of the circulation, the blood, which has passed into the cells from the veins, is pressed into the branches of the splenic veins by a force derived from the elasticity of the fibro-elastic tissue which surrounds the cavities of the cells, thus constituting a *vis-a-tergo*, which contributes to propel the blood onwards in its circulation through the liver. Should there arise, however, any obstructing cause which the resilience of the spleen is unable to overcome, a regurgitation must take place, leading to a congestion both in the mesenteric and splenic veins. The spleen may thus serve as a receptacle for the blood of the abdominal circulation during any temporary check to its free passage into the vena cava; a purpose which is more fully answered in herbivorous animals in whom the abdominal circulation is more

extensive, and the spleen is of larger dimensions and greater elasticity.

The splenic corpuscles are thickly scattered throughout the cellular parenchyma of this organ; and from each corpuscle there arises a minute lymphatic vessel; the interlacing of adjacent lymphatics giving rise to a fine and extensive net-work. The trunks of these vessels enter into the Malpighian glands, and again ramifying, form a lymphatic plexus in the interior of these bodies. The fluid contents of these vessels, which had been before pellucid, is now found to contain white organic globules, similar in every respect to those observed in the fluid of lymphatic glands in other parts of the body. The author considers the secretion of this fluid, which appears to be identical with the contents of the lymphatic glands, as being the peculiar function of the splenic parenchyma.

A few illustrative drawings and diagrams accompany this paper.

2. "On the Structure and Developement of the Nervous and Circulatory Systems, and on the existence of a complete Circulation of the Blood in Vessels in the Myriapoda and the Macrourous Arachnida." By George Newport, Esq. Communicated by P. M. Roget, M.D., Sec. R.S.

This paper is the first of a series which the author proposes to submit to the Royal Society on the comparative anatomy and the developement of the nervous and circulatory systems in articulated animals. Its purpose is, in the first place, to investigate the minute anatomy of the nervous system in the Myriapoda and the Macrourous Arachnida, and more especially with reference to the structure of the nervous cord and its ganglia; and thence to deduce certain conclusions with respect to the physiology of that system and the reflex movements in vertebrated animals; secondly, to demonstrate the existence of a complete system of circulatory vessels in the Myriapoda and Arachnida; and thirdly, to point out the identity of the laws which regulate the developement of the nervous and circulatory systems throughout the whole of the Articulata, and the dependence of these systems on the changes which take place in the muscular and tegumentary structures of the body, as, in a former paper, he showed was the case with regard to the changes occurring in the nervous system of true insects.

The first part of the paper relates to the nervous system. A description is given of this system in the Chilognatha, which the author was led, by his former investigations, to regard as the lowest order of the Myriapoda, and approximating most nearly to the Annelida. He traces the different forms exhibited by the nervous system in the principal genera of that order, the most perfect of which are connected on the one hand with the Crustacea, and on the other with true insects. Passing from these to the Geophili, the lowest family of the Chilopoda, which still present the vermiform type, the nervous system is traced to the tailed Arachnida, the Scorpions, through Scolopendra, Lithobius and Scutigera; the last of which tribes connects the Myriapoda on the one hand with the